

SOIL SURVEY OF EAST BATON ROUGE PARISH, LOUISIANA.

By CHARLES W. ELY, HERBERT W. MAREAN, and N. P. NEILL.

LOCATION AND BOUNDARIES OF THE AREA.

East Baton Rouge Parish is located in the southeastern part of the State of Louisiana. The Mississippi River forms the western boundary, while the parish of East Feliciana lies immediately to the north, St. Helena and Livingston to the east, and Ascension and

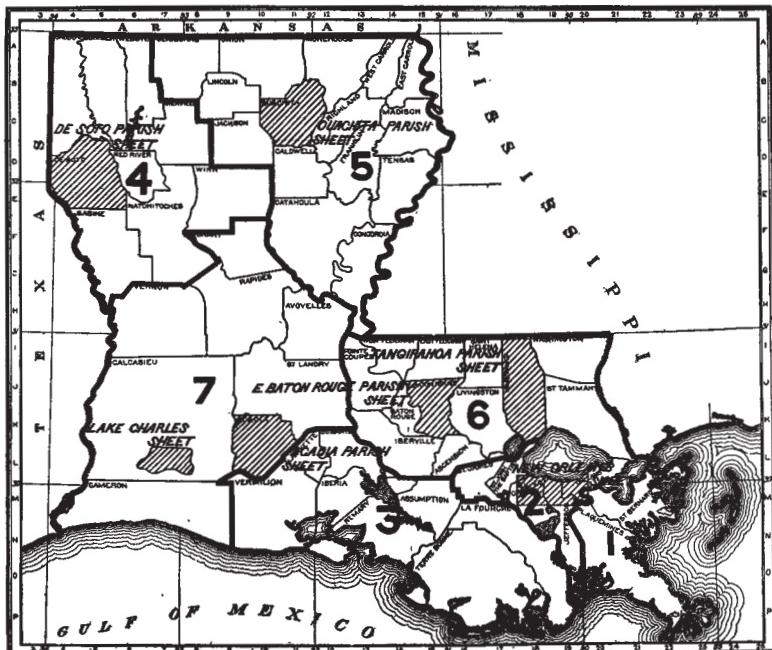


FIG. 21.—Sketch map showing location of the East Baton Rouge Parish area, Louisiana.

Iberville to the south. The Amite River flows along the eastern boundary. Baton Rouge, the county seat and the capital of the State, is situated on the Mississippi River, in the southern half of the county, and is 89 miles distant from New Orleans by the Yazoo and Mississippi Valley Railroad. The parish is irregular in shape and contains 288,512 acres, or about 451 square miles.

The base map used for the northern part of the parish was furnished by the United States Geological Survey, but the remainder of the parish was covered by a plane-table survey made by the soil survey party in the field.

HISTORY OF SETTLEMENT AND AGRICULTURAL DEVELOPMENT.

The territory covering the area of the present survey was ceded to the United States by the French in 1803. West Florida, as it was known, was taken possession of by the governor of the Territory of Orleans, or what is now Louisiana, in 1810. This was soon afterwards divided into parishes, of which East Baton Rouge was one.

The first white settlers within East Baton Rouge Parish were compatriots of the French who founded New Orleans. A number of Acadians, who were expelled by the English from Canada, reached New Orleans in 1759, and a great many finally settled within the present limits of the parish. By 1803 Baton Rouge had become a town of some importance. Soon after the battle of New Orleans glowing accounts of the richness of southern Louisiana, spread by Jackson's soldiers and river boatmen, came into circulation and a great many planters from Georgia, Alabama, and neighboring States rushed in with their negroes, and from then until 1825 or 1830 settlement was very rapid and the country is said to have been very prosperous. Naturally the first lands settled were near the river, where transportation was easy; away from the main streams the development of the country progressed slowly. Even at the present time there are considerable areas of land in the northeastern part of this parish capable of cultivation, on which virgin timber is growing, and it is not hard to find persons who can remember when large areas now under cultivation were in forest.

The railroads in the parish are of comparatively recent date, and even these, as they follow a line not very far from the Mississippi River, have never had the effect in developing the country that railroads have had in other places.

Indian corn and tobacco were the first crops grown in this section. Cotton naturally did not attain much importance until after 1792. Sugar cane was introduced into the State in 1751, but was not very successful until De Bore discovered a process for granulating the sugar in 1795. Rice was another early crop, as was also indigo. Since the beginning of the nineteenth century cotton and sugar cane, more especially cotton, have been the main crops grown in the parish. Cotton was a crop easily grown under slave labor and was found very profitable. The civil war changed conditions and ruined many planters, and though probably those in East Baton Rouge Parish did

not suffer so severely as in many parts of the South, the war gave agriculture a serious setback, from which it is only now recovering.

From the close of the war until twenty or twenty-five years ago there ensued a period of adaptation to the new conditions and of very little agricultural development. Recently there have appeared some signs of an awakening. Japanese clover and alfalfa have been introduced and in a general way the farmers are beginning to realize that they are growing too much cotton, and it is probable that the diversification of crops will be more marked in the future.

CLIMATE.

The following table, compiled from the records of the Weather Bureau at the experiment station near Baton Rouge, indicates the normal monthly precipitation and temperature of the region. As a rule, the climate is characterized by excessive precipitation in winter and early spring, and by drier weather in summer. The ground often becomes hard and difficult to plow in late fall. The last frost in spring comes about the middle of February and the first in fall about the middle of November, which gives a growing season of approximately two hundred and forty days, and no great amount of damage is ever done by frost, though occasionally early oats are killed and sugar cane is sometimes damaged.

Normal monthly and annual temperature and precipitation.

Month.	State experiment station.		Month.	State experiment station.	
	Temperature.	Precipitation.		Temperature.	Precipitation.
January.....	51.5	5.11	August.....	81.7	5.68
February.....	54.6	4.86	September.....	77.6	3.42
March.....	60.9	4.97	October.....	67.9	3.28
April.....	68.2	4.81	November.....	59.2	3.70
May.....	74.7	2.27	December.....	52.1	4.90
June.....	79.4	5.83	Year.....	67.4	54.61
July.....	81.5	5.78			

Dates of first and last killing frosts.

Year.	State experiment station.	
	Last in spring.	First in fall.
1901.....	Mar. 7	Nov. 17
1902.....	Feb. 25	Dec. 5
1903.....	Feb. 18	Nov. 19
Average.....	Feb. 26	Nov. 24

PHYSIOGRAPHY AND GEOLOGY.

East Baton Rouge Parish is naturally divided into two main physiographic divisions—the Mississippi flood plains and the uplands. The two sections are distinctly separated by the river bluffs, which rise abruptly from the alluvial bottom to the loess-covered plains above.

From the city of Baton Rouge to a point about 6 miles north the bluffs border immediately upon the river. The bottoms are thus divided into two sections. The northern section is of somewhat limited extent, unprotected by levees, and swampy, and consequently of little importance agriculturally at the present time. The larger area lies to the south and southeast of Baton Rouge. This is diked and, excepting the swampy places, is all under cultivation. It presents the characteristic features of the Mississippi flood plain, a nearly level belt of country from 2 to 5 miles broad, sloping gently from the stream banks inland to the bluffs, the "natural levee" of the river banks being the highest portion. A sluggish bayou flows along the foot of the bluffs, carrying the drainage of the bottoms ultimately into the Amite River. Along this stream there is a belt of swampy land of greater or less extent.

The upland division is characterized by a level to gently rolling topography, with a limited area in the northwestern corner which is rolling or hilly. The river bluffs reach their greatest height at Port Hudson, on the northern boundary of the parish, where they rise abruptly to a height of 80 feet or more. From that point they gradually become lower until in the southeast corner the elevation is not more than 20 or 30 feet above the bottoms.

The general slope of the upland is to the southeast. It has the general slope of the country toward the Gulf, and, besides, a slope away from the river, which is characteristic of many river bluff lands. The drainage of the larger part of the area is to the southeast into the Amite River, only a narrow zone along the bluffs being tributary to the Mississippi. This zone reaches its greatest width—about 5 miles—in the northwestern corner. Here the streams have cut deep into the loess, making a belt of broken country. In most other places water falling within less than a mile of the bluffs flows eastward and finally into the Amite River.

The principal tributaries of the Amite River are the Comite River, draining the northern central part of the area; Big and Little Sandy creeks, draining a part of the northeast corner, and Wards and Dawson creeks, draining the southwest. All these streams, but more especially their smaller tributaries, are very sluggish, and either take their rise in flat, swampy areas or meander broadly through belts of swampy country. Only the larger ones have eroded any chan-

nels to speak of, and the majority have cut their beds only a few feet below the general level of the country; hence there exists over the parish a condition of sluggish natural drainage. The fall is so gradual that in times of heavy precipitation, such as occurs in winter and early spring, the streams are swollen far beyond their normal capacity, and large areas may be under water for a week or longer and remain too wet for cultivation for long periods. The smaller streams dry up during summer.

East Baton Rouge Parish lies entirely within the Coastal Plain. Formations belonging to the Lafayette, Port Hudson, and other Coastal Plain groups probably underlie most of the area, but only comparatively recent deposits—viz, the Mississippi alluvium and the loess or bluff formation of Pleistocene age—are exposed in sufficient areas to influence the soils. The alluvium covers only a comparatively small proportion of the area, but the most productive soils are found in this section. The loess covers the entire uplands section of the parish. It is from 10 to 20 feet thick near the river, but becomes thinner away from it. As to its exact method of deposition, opinions differ.

SOILS.

The soils found in East Baton Rouge Parish have been classified into six types, exclusive of Meadow, and may be divided into two groups—the alluvial and the upland. Excepting Meadow, which possesses a variable character, the upland soils are all derived directly from the loess and contain a high percentage of silt. The soils of the Mississippi bottoms, however, vary from sandy loams to the heaviest of clays.

The following table shows the area of the several types:

Areas of different soils.

Soil.	Acres.	Per cent.	Soil.	Acres.	Percent.
Memphis silt loam.....	219,200	75.9	Yazoo sandy loam.....	1,536	0.6
Sharkey clay.....	18,432	6.4	Yazoo loam.....	1,472	.5
Meadow.....	17,408	6.0	Total.....	288,512	.....
Marshall silt loam.....	16,640	5.8			
Yazoo clay.....	13,824	4.8			

MEMPHIS SILT LOAM.

The Memphis silt loam is an incoherent friable silt loam, of light-brown, yellow, or gray color, with an average depth of about 10 inches. The soil, which possesses a little more plasticity than a very fine, sandy loam, rests upon a claylike silt loam, which is usually somewhat stiff and plastic, but yet is made up largely of silt particles. The color of the subsoil varies from a light yellow or mottled

yellow and gray to a chocolate brown, this variation being probably due to the amount of oxidation of the iron salts which it contains.

The Memphis silt loam is by far the most widely distributed soil type found in the area, covering in all about 342 square miles. It occurs in every part of the uplands, and its topographic features are those of this entire division of the area. Though very uniform in mechanical characteristics, there are differences of color and structure which follow topography and drainage. Along the bluffs, where the land is more rolling, and consequently better drained, the soil is of a deeper brownish color, with a dark-reddish or chocolate-colored subsoil. This phase, except where erosion has worked serious injury, is more productive than the light-yellow or gray soil that occupies the flatter areas. Where natural drainage is inadequate, as it is over the larger part of the parish, the lighter shades prevail, and in the semiswampy places the soil may be almost white, with a pale-yellow or light-mottled subsoil. The presence of large quantities of iron concretions in soil and subsoil indicate a low degree of oxidation consequent upon poor soil drainage and lack of aeration. These wet places, when cleared, require a year or two of cultivation and drainage before good crops can be grown upon them. Over considerable areas of the Memphis silt loam a condition of swappiness prevails. These areas have been outlined upon the accompanying soil map and their location indicated by the swamp symbol. Such areas are always wooded, usually covered with palmetto, and their only present value to the farmer consists in pasturage. They occupy flat country bordering streams or bayous or the lands at the headwaters of smaller streams. The soil in such areas does not differ in mechanical composition from the cultivated land of the type. Here, as before stated, the lack of drainage and aeration is apparent in the light-gray or whitish color of the soil, and it is very common to find a more or less perfectly cemented hardpan at a depth of 20 to 36 inches. This will be further discussed under "Drainage."

The texture of this soil makes it valuable for a wide variety of crops. With reasonable care it can be kept in a good, mellow tilth, as it does not bake nor clod as a clay soil does, and at the same time it is firm and compact enough not to be leachy and susceptible to drought, while only limited areas in East Baton Rouge Parish are rolling enough to be subject to washing. It is well adapted to grass, cotton, corn, sugar cane, and vegetables of all kinds. Small grains, such as wheat, barley, and oats have been grown with marked success in more northern climates, and it is probable that these crops might be added to the present rather limited number produced in the parish.

Cotton, corn, and sugar cane, with a few vegetables for home use, are practically all the crops now grown upon the Memphis silt loam.

Sugar cane does fairly well, averaging about 20 tons per acre, and in favorable seasons more. The yield is not so heavy as on some other soils, but the cane is richer in sugar than that grown upon the bottoms. There are no sugar houses near at hand, and the fact that the crop must be hauled or shipped by rail to refineries some distance away is very discouraging. Cotton is by far the most important crop, yielding in good seasons about three-fourths bale per acre. Corn returns from 15 to 25 bushels. Lespedeza is highly prized for pasturage or hay. It yields about 1 ton per acre, and in addition is a valuable fertilizer. Cowpeas are occasionally sown in the corn for forage, and this practice is to be commended. Crab grass grows spontaneously and makes a good hay, yielding from 1 to 2 tons per acre.

The Memphis silt loam should be an excellent soil for stock raising. Potatoes, strawberries, and other vegetables and truck crops could probably be grown with profit along the line of the railroad.

The following table shows the average results of mechanical analyses of Memphis silt loam as found in East Baton Rouge Parish:

Mechanical analyses of Memphis silt loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
12854, 12650.....	Soil.....	0.2	1.4	0.4	0.6	2.9	78.1	15.9
12651, 12655.....	Subsoil .....	.1	.6	.4	.9	1.9	74.3	21.3

MARSHALL SILT LOAM.

The Marshall silt loam is a black or dark-brown soil found in the uplands. A typical section shows a dark-brown or black silt loam from a foot to 18 inches in depth, underlain by a sticky silty clay of a drab or mottled-yellow color. Just below the dark surface soil a stratum of lime concretions is generally found. This is often from 9 to 12 inches in thickness, but only in a few cases was it found to form a true crust or hardpan, the usual occurrence being more in the form of small segregated nodules. It is not uncommon to find the surface 5 or 6 inches of soil a dark-brown or brown friable silty loam, while immediately underlying this to a depth of 15 or 18 inches occurs a stiff, plastic, dark-colored soil, much like a true clay. Farmers speak of this as the "slick layer" when it is turned up by the plow.

While formed from precisely the same material as the Memphis silt loam, this type is much more difficult to work than the latter, and shows considerable tendency to clod and puddle if handled when too wet and to bake if left unstirred in the field for a long time.

The Marshall silt loam occurs only in the upland portion of East

Baton Rouge Parish. While a few scattering areas of no great extent are found in various sections, the largest body occurs a few miles east and northeast of Baton Rouge. It generally occupies low, flat areas, and a good deal of it is in a swampy condition and unfit for cultivation at present. To a great extent it coincides with the sags and broad depressions, but is sometimes continuous over a low rise. However, practically all of it requires artificial drainage for the best results, and most of it for any cultivation whatever.

The Marshall silt loam, like the Memphis silt loam, is formed from the loess. Through the influence of poor drainage and the consequent rank character of vegetation a large amount of organic matter has become incorporated in the soil. The larger organic matter content and the presence of the lime nodules, with accompanying modifications, are the chief differences between this soil and the Memphis silt loam.

According to the testimony of those who have farmed it, the crop values and special adaptations of the Marshall silt loam vary somewhat with the seasons. In favorable years cotton yields from 1 bale to 1½ bales per acre, yet in a very wet or a very dry season much smaller yields are secured. This crop also rusts badly when heavy rains are followed by hot, dry weather. It is probable, if the land were artificially drained, that this difficulty could be largely overcome by stirring the surface with a cultivator before it had baked or hardened. Corn and sugar cane both do well, the latter being better adapted to this type than to the other upland soil. Corn averages 10 to 25 bushels. Crab grass is considered the best grass for hay. Clover does not thrive, but Bermuda grass makes excellent pasturage.

The following table shows the average results of mechanical analyses of the Marshall silt loam of East Baton Rouge Parish:

Mechanical analyses of Marshall silt loam.

Number,	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
12644, 12646	Soil	Tr.	0.4	0.1	1.2	4.2	73.5	20.2
12645, 12647	Subsoil	0.1	.5	.2	.7	3.3	80.3	14.7

YAZOO CLAY.

The soil of the Yazoo clay, to a depth of from 5 to 10 inches, consists of a brown clay or clay loam. This is underlain by a plastic drab or mottled yellow and gray clay to a depth of 3 feet or more. Occasionally sand is struck within 3 feet, and in other places a layer of fine sand and silt a few inches thick is found, the material immediately above and below this being clay. The soil carries considerable organic

matter and has the property of granulating or falling to pieces when cultivated or exposed to the air. If left unstirred for some time and allowed to pack and afterwards to dry, the surface becomes dissected with a series of cracks, often sufficiently wide and deep to put one's hand in for some little distance. When in the proper condition of moisture this soil is not looked upon as particularly difficult to cultivate, but if handled when too wet it becomes very hard on drying, and when it has become very dry, as sometimes happens in the autumn months, it is almost impossible to plow it at all.

The Yazoo clay is the soil type of greatest extent, and by far the most important agriculturally, in the Mississippi bottoms. It is found in one unbroken area south and southeast of Baton Rouge. The surface is generally quite flat, with few natural drainage channels, and this, together with its close structure, results in imperfect drainage; hence over much of the area it has been found necessary to construct open ditches a few rods apart to carry the surplus water into the bayous. No tile drains are at present used. It is claimed that tiles laid in this soil are very hard to keep clear of silt, but it is probable that this could be remedied by very careful laying. While at the present time and at the present prices of land it might be questioned whether it would be profitable to use tile, since they would need to be laid very close together, yet as the land becomes more valuable the space required for open ditches will be needed for cultivation, and underground drains will then be economical. Moreover, the open ditches require to be cleaned out frequently, as they furnish a harboring place for weeds. However, the ditches used at present do the work fairly well, and except in very wet seasons farmers usually have ample time to prepare the soil for crops.

The materials of which the Yazoo clay is composed are the clay and fine particles left in quiet water by the river during seasons of overflow, but the type does not represent the finest particles, which make up the Sharkey clay. It is naturally a very productive soil, undoubtedly the most productive in the parish, and has been cultivated for a great many years with scarcely any diminution in the yields. Practically every foot not in ditches or roads is under cultivation, and it is considered the most valuable land in this section. Cotton is the chief crop and easily averages 1 bale per acre, while yields of $1\frac{1}{2}$ to 2 bales or more are not uncommon. Sugar cane is the crop next in importance and yields 25 to 35 tons per acre. While this crop is relatively less important in East Baton Rouge Parish than in other parts of Louisiana, it is worthy of note that the Yazoo clay is one of the great sugar-cane soils of the State. A small acreage has been devoted to rice, which yields from 10 to 15 sacks (the weight of a sack ranges from 140 to 200 pounds) per acre. Of the minor crops are corn, which is probably next to sugar cane in acreage; alfalfa, which is cut four

to six times in a season, yielding from 1 to $1\frac{1}{2}$ tons per cutting; and cowpeas.

Yazoo clay is well adapted to the crops grown, especially cotton and sugar cane. However, the growing of one crop continuously is apt to injure even this productive soil, and some legume, such as cowpeas, should be planted at least once in three or four years. Grasses would probably do well, and onions and other crops requiring a heavy, rich soil might prove profitable. This land is held at from \$20 to \$60 an acre.

The following table shows the average results of mechanical analyses of the Yazoo clay as found in East Baton Rouge Parish:

Mechanical analyses of Yazoo clay.

Number.	Description.	Fine gravel. <i>Per cent.</i>	Coarse sand. <i>Per cent.</i>	Medium sand. <i>Per cent.</i>	Fine sand. <i>Per cent.</i>	Very fine sand. <i>Per cent.</i>	Silt. <i>Per cent.</i>	Clay. <i>Per cent.</i>
12666, 12664.....	Soil.....	0.0	0.3	0.2	1.5	6.8	43.0	48.1
12667, 12665.....	Subsoil.....	.0	.2	.2	1.2	4.4	54.6	39.1

YAZOO LOAM.

The soil of the Yazoo loam is a brown loam from 6 to 12 inches in depth, in which there is a considerable proportion of very fine sand and a preponderance of silt, but very little of the coarser grades of sand. The subsoil is usually a drab or yellowish clay loam, which often grades into a heavy clay at from 20 to 30 inches. The soil is loose and easily cultivated when in proper condition of moisture and does not become very sticky when wet nor form hard clods or bake when dry.

The Yazoo loam is found in narrow bands along the Mississippi River and in somewhat elevated portions of the bottoms south and southeast of Baton Rouge. In East Baton Rouge Parish the areas are small and those found along the streams are highest along the stream banks. Areas at a distance from the streams have their centers a few feet above the surrounding soil. The drainage of this soil is undoubtedly better than that of the Yazoo clay, from which the Yazoo loam is usually easily distinguished by its lighter color. Some of the areas away from the rivers are poorly drained, and in these water often stands for some time during heavy rains.

The material of the Yazoo loam is composed of particles slightly coarser than those of the Yazoo clay. These have been laid down by the waters of the Mississippi River during high water, and occur where the current was relatively swift. While perhaps not as strong a soil as the latter, the Yazoo loam is looked upon as a productive type and by some is preferred, as it is more easily worked. As a rule it is held at about the same price.

Cotton is the chief crop at present and yields from three-fourths to 1 bale per acre. Corn, where grown, yields from 20 to 35 bushels per acre, and other crops in proportion. The Yazoo loam is well adapted to these crops and to sugar cane, rice, etc., but will not stand such exhaustive methods as the Yazoo clay, and more attention needs to be paid to the incorporation of organic matter in the soil and to the use of leguminous crops. Alfalfa grows very well. The Yazoo loam is also a fair truck soil, but is not so early as the Yazoo sandy loam.

The following table shows the results of mechanical analyses of the Yazoo loam as found in East Baton Rouge Parish:

Mechanical analyses of Yazoo loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
12660.....	Soil.....	0.0	0.1	0.1	0.7	19.3	62.9	16.8
12661.....	Subsoil....	.0	.1	.1	.5	6.6	61.9	30.5

YAZOO SANDY LOAM.

The Yazoo sandy loam is a light-brown or yellow, fine to very fine, sandy loam, generally quite incoherent, and about 12 inches in depth. The subsoil has much the same texture as the soil, but contains less organic matter, and is often little more than very fine yellow sand. There is considerable silt mixed with soil and subsoil, but practically no clay, except where the underlying stratum comes near to the surface, where the sandy layer thins out toward adjacent areas of loam or clay.

The Yazoo sandy loam is found only in the Mississippi bottoms, where it occurs as low ridges along the banks of the river. It represents the coarsest particles deposited by that stream from its swiftest overflow waters in times of floods. Only limited areas occur in East Baton Rouge Parish, amounting in all to about 1,536 acres. A small strip occurs along the river bank south of Port Hudson, where it forms a natural levee for that undiked portion of the bottoms. Other small areas are found south and southeast of Baton Rouge.

On account of its texture and slightly elevated position, the Yazoo sandy loam is the best-drained soil of the Mississippi bottoms. For this reason it is an early soil and well adapted to the production of market-garden crops. At present it is planted to the crops most extensively grown in the bottoms, viz, cotton, corn, and sugar cane. All of these give fair average yields, though where the soil becomes very light and loose in texture it produces less than the typical soil, and the crops are much more subject to injury by drought.

The following table shows the results of mechanical analyses of samples of the Yazoo sandy loam as found in East Baton Rouge Parish:

Mechanical analyses of Yazoo sandy loam.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Slit.	Clay.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
12662.....	Soil.....	0.0	0.1	0.1	7.3	49.7	33.8	9.0
12663.....	Subsoil ....	.0	.1	.1	1.9	37.7	50.3	9.8

MEADOW.

In this area the term "Meadow" includes all those narrow strips of overflow land lying along the main stream courses. The soil material varies from an incoherent silt from 5 to 6 feet in depth to an almost pure wash sand. As a rule the more silty material is confined to the smaller streams and to the territory along the larger ones most subject to wash from the uplands. Near the Comite River it is an almost pure white sand.

The surface of the Meadow is broken by gullies and sloughs, which mark former courses of the streams. Generally these are filled with water most of the year, and if of any size are covered with cypress trees, while the surrounding soil is covered with gum, bay, oak, and other trees. Practically all of the Meadow is wooded, the only cultivated spots being along the Amite River and where the roads cross the streams in other places. The greater part of the type is found along the Amite and Comite rivers, and only narrow strips are seen along other streams. It is formed from sediment deposited by the streams during seasons of overflow, and owes its variable character to the varying swiftness of the currents that have deposited it. The larger streams have a stronger current and carry considerable sand, while the smaller ones are laden with silty particles derived from the uplands.

The surface is only fairly level, being broken by the sloughs above mentioned, and except in times of high water the soil is fairly well drained. It is, however, always subject to sudden overflow during heavy rains, and the risk taken in growing crops is great; hence very little of the type is under cultivation. It is considered a good soil, but farmers say poor spots are often left in the fields after overflow, caused by the washing away of the soil or the depositing of sand. The heavier portions, if cleared, should prove a good soil for cotton, corn, or sugar cane.

In the present condition the Meadow is of little value except as pasture for cattle, which are sometimes drowned by sudden rises in spring, especially in the broader areas.

SHARKEY CLAY.

The Sharkey clay is the heaviest type of soil found in this area. The soil proper is generally composed of from 4 to 8 inches of dark-brown or black clay, with considerable partly decomposed vegetable matter mixed with it. This is underlain by an exceedingly heavy drab or mottled clay. In the few instances where the soil was found under cultivation the subsoil had been mixed with the soil, producing a deeper dark-brown heavy clay that is very intractable, baking and sun-cracking badly. In wet weather the Sharkey clay becomes so sticky that masses of it adhere to the wheels of vehicles until it is next to impossible to drive across it. When it has become dry and packed, roads upon it become hard and glassy, resembling asphalt.

The Sharkey clay is found in the lowest parts of the Mississippi bottoms, where the water stands longest at times of inundation. Such areas are usually found along the bluffs. One large area is found in the undiked portion of the bottoms north of Baton Rouge, while other areas are found south and southeast of that city.

The surface of the Sharkey clay is level and the natural drainage is poor. Almost the entire body is in a condition of swamp, water standing on the surface a great part of the year. There are few drainage channels, and these almost on the surface, and the soil is naturally so compact and impervious that little water finds its way into the subdrainage, and hence a great deal of it must escape by evaporation. The type is covered by a dense growth of cypress, palmetto, gums, and other water-loving trees and shrubs, with some valuable timber.

The Sharkey clay is an alluvial soil, and the particles of which it is composed are the finest carried by the waters of the Mississippi. These have been deposited during seasons of overflow in places where there was practically no movement and the water remained impounded for long periods.

The Sharkey clay is everywhere recognized as a strong, fertile soil, producing large yields of cotton, corn, and sugar cane.

Though stiff and intractable and requiring careful handling, it is nevertheless a valuable soil, and with proper drainage and wise cultural methods the tilth improves very materially. The reclamation of most of it, however, is a difficult engineering problem and would require the outlay of considerable capital. In its present condition this type has little value except for the pasturage afforded by the wild cane and undergrowth.

The average results of mechanical analyses of samples of the Sharkey clay are shown in the following table:

Mechanical analyses of Sharkey clay.

Number.	Description.	Fine gravel.	Coarse sand.	Medium sand.	Fine sand.	Very fine sand.	Silt.	Clay.
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
12656, 12658.....	Soil	0.0	0.2	0.2	1.8	1.8	44.8	51.1
12657, 12659.....	Subsoil.....	.0	.3	.3	1.8	1.8	42.1	53.5

DRAINAGE

It will have been noted in the preceding pages that scarcely any soil type has been described that is not in need of artificial drainage to bring it up to its normal producing capacity. The Memphis silt loam, the Marshall silt loam, the Yazoo clay, and the Sharkey clay, which together cover nearly the entire area of the parish, are all types in which large sections need artificial drainage. A reference to the soil map will show that there are large areas in all parts of the parish that are in a condition of semiswampiness and therefore of little or no agricultural value. It is probable that all such areas in the uplands could be reclaimed quite easily. By deepening and straightening some of the smaller streams and by building large community ditches, a sufficient outlet might be obtained to care for the normal run-off of the low, flat sections. Such work would necessarily have to be done on a large scale and either under the direction of parish officers or of a number of landowners in cooperation. Under existing conditions the natural drainage is insufficient, the sluggish creeks and bayous are unable to carry off surplus water in times of heavy rainfall, and wide areas are often flooded for a week or more, while pools of standing water remain on the surface for considerable periods. During these times water is found within a few inches of the surface over large areas of cultivated lands. Though this condition seldom occurs while crops are growing, the effect is injurious to the land and yields are reduced. There is also often more or less delay in putting in crops from this cause. Increasing the effectiveness of the natural drainage channels would not only reclaim much land now practically worthless, but would also increase the productive capacity of much now under cultivation.

Most of the areas indicated upon the map as swampy are characterized by a soil in which a low degree of decomposition and poor soil aeration are evident. A hardpan of partly cemented clay is found at a depth of from 2 to 4 feet. This stratum is, as a rule, not so firm but that it can be penetrated by the soil auger, yet it is practically impervious to water. Areas were observed where water had been standing on the surface for several days, yet this layer was perfectly

dry. Experience in other places has proved that thorough drainage will in time tend to break up this layer. A drainage system would probably have to be in operation a few years before the best results could be obtained from the land.

Some ditching has been done by individuals, always with excellent results, but on the whole the farming population of this section have not realized the extent to which good drainage would improve the land. What has been done is usually with an idea of carrying off surface water rather than to remove the excess of soil water. For best results with ordinary crops, standing water should never be within less than 2 to 3 feet of the surface. As far as could be learned, no tile or other underground drains for purely agricultural purposes exist in this section. Until the larger outlets are improved under-drainage could not be made fully effective, and yet there are many instances where an individual farmer could, by the construction of a few ditches and tile drains, so improve the value of his land as to more than pay the cost of such operations in a short time.

Reclamation of the swampy areas in the Mississippi bottoms is a problem of more magnitude. It would require expensive diking in most cases, but the value of the cultivable lands thus reclaimed would be so great that outlays of large sums of money would be justified.

AGRICULTURAL CONDITIONS.

As cotton is almost the sole reliance of the farmers of East Baton Rouge Parish, the prosperity of the agricultural class depends to a great extent upon the yield and price of that crop. Under the system of purchasing all needed supplies and giving liens against the prospective crop, good farmers estimate that cotton must bring 7 to 8 cents per pound in order that the planter may meet his ordinary obligations. As the price of cotton has varied greatly in recent years, so there have been great variations in the money returns secured from plantations. On the whole, while there are planters who, on account of superior business ability and good farming, are making money, the majority are doing little more than keeping even.

Something more than one-third of the total area of East Baton Rouge Parish is actually under cultivation. The remainder is in forests and swamps. The greater part of the cultivated land is in the western half, along the Yazoo and Mississippi Valley Railroad and the Mississippi River. As distance from the railroads and navigable streams increases, the farms become less numerous, until at the farthest points, strips along the public roads and small clearings in the woods are the only cultivated land seen. The average value per acre of lands over the entire area is about \$7 an acre, but the selling

price ranges from \$5 an acre for uncleared lands to \$50 or \$60 for improved cultivated land near towns in the uplands and slightly more than that in the bottoms. Most of the cultivated land in the uplands can be had for from \$20 to \$30 an acre. As this land rents at from \$4 to \$5 an acre, it is readily seen that at present prices land in this area should return a good interest on the investment.

Only about twenty-seven out of every hundred farms in this parish are operated directly by the owners. The remainder are rented under one or another of three systems—for cash, for so much lint cotton, or for a certain proportion of the crop. The cash rent of land is usually about \$5 an acre. In this case the landlord takes a first lien on the cotton crop for his money, and the merchant who furnishes the tenant his supplies has a second lien. When rented for a proportion of lint cotton, the landlord receives from 500 to 600 pounds for 10 to 12 acres of land, and the tenant furnishes teams, fertilizers, etc., and pays ginning expenses, the landlord furnishing nothing but the land. Under the third system, the landowner provides teams, feed, implements, etc., and pays for one-half the fertilizers and ginning expenses, and receives from one-fourth to one-half the crop. Most of the tenants are negroes, though there are a few whites. A few negroes own their land. Some of the larger plantations are looked after by managers, who receive a salary or fixed proportion of the crop. These may lease the land in small parcels to tenants or cultivate it by hired labor. Most of the men who live on the farms lease the greater part of their land and exercise almost as much supervision over the tenants as over hired labor, so that much more of the land is managed by the owners than would appear upon the face of the transactions.

The size of farms varies from 15 to 20 up to several thousand acres. According to the census of 1900, the average-sized farm is 80 acres,^a of which 20 to 30 acres would be under cultivation. Tenants usually work from 15 to 25 acres of cultivated land. A considerable proportion of the land in the parish is owned in tracts of 1,000 to 2,000 acres or larger. Frequently on the same plantation a part may be rented for cash, a part on shares, and the remainder worked by hired labor. As a rule, land in the Mississippi bottoms is held in larger tracts than in the uplands. The average value of the farms is about \$1,400, of which \$700 represents the value of the land, \$250 the buildings, \$150 the implements, and \$250 to \$300 the live stock.

Farm labor is almost exclusively colored. Field hands receive from \$10 to \$15 a month and board during the season. Cotton pickers usually receive 50 cents per hundred pounds of seed cotton, but at times as high as 75 cents has been paid. All the members of

^a According to the census classification each parcel farmed by a tenant was counted a "farm."

the family work at cotton picking. In East Baton Rouge Parish negro labor is regarded as fairly efficient, especially where cotton is the crop. Sometimes there is trouble in securing enough hands. As a rule, the negroes prefer to rent land on the share system when cotton is high, but to work for wages when it is lower in price. However, it is much the same to the landowner, as almost as much supervision is given in one case as in the other.

Cotton is the principal product of East Baton Rouge Parish. Probably more than one-half of the entire area of cultivated land is planted to this crop every year. After cotton, corn is the important crop in point of acreage, occupying about one-fourth of the cultivated land. This does not produce enough corn to supply the local demand, and many farmers find it necessary to buy. The yield is somewhat low—15 to 25 bushels per acre—and the quality generally poor. Some farmers buy northern corn for seed, and this is said to be earlier and better for the first year, but afterwards becomes very similar to that grown here, probably largely because of mixture with the native corn. Corn is usually planted in rows 4 or 5 feet apart, although the land is productive enough to stand closer planting. Aside from climatic influences nearly all soils in East Baton Rouge Parish are good corn soils, and it would seem that it should be practicable to increase the yield by closer planting, deeper plowing, more careful cultivation, manuring, and more careful selection of seed, so as in time to produce a better variety adapted to the climate.

Sugar cane is the third most important crop, some 7 or 8 square miles being devoted to it, chiefly in the Mississippi bottoms in the vicinity of Gardere Station and Burtville. The yield varies from 25 to 35 tons per acre in the bottoms and from 20 to 25 tons per acre in the uplands. Planters usually obtain from \$3 to \$3.50 a ton for their cane, which makes the acre value of this crop very high; but as there is a great deal of labor required, and seed cane costs from \$10 to \$12 an acre, the profits are not so great as would appear. The fields are left in cane two years, after which it is considered the best plan to plant the land in corn, in which cowpeas are sown.

The rotation best suited to the soils and conditions in the uplands, in the opinion of the best farmers, is cotton two years, followed by corn in which cowpeas are sown at the last plowing, the latter being cut for hay or pastured, and followed the next year by cotton. This is a good rotation and the practice is to be commended, but as a general rule the cowpeas are left out. Of the minor crops Japan clover is considered the best forage crop. It is not grown in any regular rotation, but in small fields, and generally yields from 1½ to 2 tons per acre. It is said to do well on poor land and to be very beneficial to the soil. The farmers would probably find it to

their advantage to grow it more extensively. Bermuda grass and crab grass are also grown for hay and pasture.

More or less live stock, consisting of cattle, hogs, sheep, and a few goats, is kept within the parish. As a rule these run wild during the winter and pick up what they can from the woods and canebrakes. Frequently a considerable number are lost by drowning or exposure. Cattle are turned on pasture in spring and fattened to some extent before selling. As a rule the native cattle and other live stock would be considered rather poor, though there are a few farms within the area on which improved animals are kept. As the soil grows such excellent grass and the season during which cattle may be kept on pasture is so long, it would seem that the production of live stock should prove a profitable business. For best results, however, a better grade of animals than the native would be required. The manure would also prove an item of profit if properly husbanded and applied to the fields.

Most farmers produce Irish and sweet potatoes and other vegetables for their own use, and a small area around Baton Rouge is devoted to truck gardening. A few hundred acres in the Mississippi bottoms are used to grow rice.

As has been stated elsewhere, one of the great needs of the farms in East Baton Rouge Parish is drainage—not only surface drainage, and the reclamation of swampy areas, but underground drainage, which would keep the soil from being soaked with water for long periods and also permit soil aeration. This, the practice of deeper plowing, the use of stable manure and green manuring leguminous crops, and a substitution of some other money crop on a part of the cotton acreage are some of the changes which would seem necessary before the best results can be secured from agriculture in this area.

The Yazoo and Mississippi Valley Railroad, running near the western border of the area, is the only railroad at present (1905) in active operation. The Shreveport and Red River Valley Railway is completed north of Baton Rouge, leaving the parish near Port Hudson, and within a few years will probably be finished southeast, extending out from the parish in that direction near Hopeville. The Mississippi River forms the western boundary of the area and provides cheap transportation for those living near, and through competition keeps down freight rates for those within reach. The Bayou Manchac is navigable up to a few miles beyond Hopeville and provides transportation for the southeast corner of the parish. The Amite River is not navigable beyond the point of junction with the Manchac, hence a railroad is badly needed in the northeastern part of the parish. It is expected one will be built out from Zachary and another eastward from Baton Rouge in a few years, and these should prove of very great benefit to the farmers in these localities.

The parish has good dirt roads, but at present they are not kept in very good condition. The silt soils of the uplands make roads that are excellent when dry but very muddy when wet. Over much of the area, however, it is simply a question of grading and drainage in order to have fine roads nearly all the year. The parish has recently purchased a road-grading machine and the roads are being put into good condition as fast as possible. Some gravel is found in places along the Amite River, and this should prove very valuable in road construction and maintenance.

Ultimately almost all cotton, sugar, etc., sold in this parish reaches New Orleans, but these products and others are first delivered to merchants in Baton Rouge, Baker, Zachary, Port Hudson, Burtville, etc., who later ship to the first-named city. There is a cotton-seed oil mill and a sugar refinery at Baton Rouge and two sugar refineries near Burtville, which handle all of these products grown in the parish. Gins are found at convenient places throughout the area surveyed, but after ginning many farmers have to haul their cotton long distances to market, which greatly reduces their profits.

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